

## **IN THE CLAIMS**

1-19. (Cancelled).

Claim 20 has been amended as follows:

20. (Currently Amended) A computer-implemented method for extracting an EMG signal out of a raw signal, said raw signal being obtained by a plurality of electrodes adapted to interact with a patient to capture signals from the diaphragm of the patient, each electrode having an associated signal channel in which a raw signal is received from the associated electrode, said method comprising the steps of:

supplying the respective raw signals from said electrodes to a processor and,

in said processor for each of said channels, automatically electronically determining a signal-to-noise ratio for the raw signal in that channel by automatically estimating a level of ECG activity in the raw signal, and automatically electronically estimating a level of EMG activity in the raw signal, and automatically electronically determining said signal-to-noise ratio based on the estimated level of ECG activity and the estimated level of EMG activity;

in said processor, for each of said channels, automatically electronically determining a weighting factor for that channel dependent on the signal-to-noise ratio of that channel; ~~and~~

in said processor, weighting the respective raw signals from the channels by the respective weighting factors determined for the channels, to obtain weighted raw signals, and summing the weighted raw signals to obtain

a summed signal representing a total EMG signal in said raw signals;  
and

emitting said summed signal as an output from said processor.

Claim 21 has been amended as follows:

21. (Currently Amended) A method as claimed in claim 20 comprising:

In said processor, normalizing said summed signal representing the total EMG signal.

22. (Previously Presented) A method as claimed in claim 20 comprising automatically electronically calculating said signal-to-noise ratio according to the equation  $R^n/(R+S)$ , wherein R is the estimated level of EMG activity, S is the estimated level of ECG activity, and n is an integer greater than 1.

23. (Previously Presented) A method as claimed in claim 20 comprising estimating the level of ECG activity by filtering an estimated ECG signal out of the raw signal and comparing the estimated ECG signal with a threshold value.

24. (Previously Presented) A method as claimed in claim 20 comprising estimating the level of ECG activity comprises automatically electronically calculating a probability function indicating a probability that an ECG signal is included in the raw signal of the channel.

25. (Previously Presented) A method as claimed in claim 24 comprising estimating the level of ECG activity only if said probability function indicates a predetermined level of probability that an ECG signal is included in the raw signal of the channel.

Claim 26 has been amended as follows:

26. (Currently Amended) A computerized device for extracting an EMG signal out of a raw signal, said raw signal being obtained by a plurality of electrodes adapted to interact with a patient to capture signals from the diaphragm of the patient, each electrode having an associated signal channel in which a raw signal is received from the associated electrode, said computerized device comprising:

an analysis unit that supplied with the respective raw signals from said electrodes and programmed, for each of said channels, to automatically electronically ~~determines~~ determine a signal-to-noise ratio for the raw signal in that channel, by automatically estimating a level of ECG activity in the raw signal, and automatically electronically ~~estimating~~ estimate a level of EMG activity in the raw signal, and automatically electronically ~~determining~~ determine said signal-to-noise ratio based on the estimated level of ECG activity and the estimated level of EMG activity and ~~that~~ to automatically electronically ~~determines~~ determine a weighting factor for that channel dependent on the signal-to-noise ratio of that channel, and ~~that-weights~~ to weight the respective raw signals from the channels by the respective weighting factors determined for the channels, to obtain weighted raw signals, and ~~that~~ sums to sum the weighted raw signals to obtain a summed signal representing a total EMG signal in said raw signals and to emit the summed signal as an output from the analysis unit.

Claim 27 has been amended as follows:

27. (Currently Amended) A device as claimed in claim 26 wherein said analysis unit ~~normalizes~~ is programmed to normalize said summed signal representing the total EMG signal.

Claim 28 has been amended as follows:

28. (Currently Amended) A device as claimed in claim 26 wherein said analysis unit is programmed to automatically electronically ~~calculates~~ calculate said signal-to-noise ratio according to the equation  $R^n/(R+S)$ , wherein R is the estimated level of EMG activity, S is the estimated level of ECG activity, and n is an integer greater than 1.

Claim 29 has been amended as follows:

29. (Currently Amended) A device as claimed in claim 26 wherein said analysis unit is programmed to estimate ~~estimates~~ the level of ECG activity by filtering an estimated ECG signal out of the raw signal and comparing the estimated ECG signal with a threshold value.

Claim 30 has been amended as follows:

30. (Currently Amended) A device as claimed in claim 26 wherein said analysis unit ~~estimates~~ is programmed to estimate the level of ECG activity by automatically electronically calculating a probability function indicating a probability that an ECG signal is included in the raw signal of the channel.

31. (Currently Amended) A device as claimed in claim 30 wherein said analysis unit is programmed to estimate ~~estimates~~ the level of ECG activity only if said probability function indicates a predetermined level of probability that an ECG signal is included in the raw signal of the channel.

Claim 32 has been amended as follows:

32. (Currently Amended) A computer-readable medium encoded with a computer program loadable into a computer for extracting an EMG signal out of a raw signal, said raw signal being obtained by a plurality of electrodes adapted to interact with a patient to capture signals from the diaphragm of the patient, each electrode having an associated signal channel in which a raw signal is received from the associated electrode, said computer program comprising programming instructions causing said computer to:

for each of said channels, determine a signal-to-noise ratio for the raw signal in that channel by automatically estimating a level of ECG activity in the raw signal, and automatically electronically estimating a level of EMG activity in the raw signal, and automatically electronically determining said signal-to-noise ratio based on the estimated level of ECG activity and the estimated level of EMG activity;

for each of said channels, determine a weighting factor for that channel dependent on the signal-to-noise ratio of that channel; and

weight the respective raw signals from the channels by the respective weighting factors determined for the channels, to obtain weighted raw signals, and sum the weighted raw signals to obtain a summed signal representing a total EMG signal in said raw signals.

Claim 33 has been amended as follows:

33. (Currently Amended) A computer readable medium as claimed in claim 32 wherein said computer program causes said computer to ~~normalize~~ is programmed to normalize said summed signal representing the total EMG signal.

Claim 34 has been amended as follows:

34. (Currently Amended) A computer readable medium as claimed in claim 32 wherein said ~~computer program causes~~ programming instructions cause said computer to calculate said signal-to-noise ratio according to the equation  $R^n/(R+S)$ , wherein R is the estimated level of EMG activity, S is the estimated level of ECG activity, and n is an integer greater than 1.

Claim 35 has been amended as follows:

35. (Currently Amended) A computer readable medium as claimed in claim 32 wherein said ~~computer program causes~~ programming instructions cause said computer to estimate the level of ECG activity by filtering an estimated ECG signal out of the raw signal and comparing the estimated ECG signal with a threshold value.

Claim 36 has been amended as follows:

36. (Currently Amended) A computer readable medium as claimed in claim 32 wherein said ~~computer program causes~~ programming instructions cause said computer to estimate the level of ECG activity by calculating a probability function indicating a probability that an ECG signal is included in the raw signal of the channel.

37. (Currently Amended) A computer readable medium as claimed in claim 36 wherein said ~~computer program causes~~ programming instructions cause said computer to estimate the level of ECG activity only if said probability function indicates a predetermined level of probability that an ECG signal is included in the raw signal of the channel.